



**PATENT**  
Attorney Docket No. 401256

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

GOTOU et al.

Application No. 09/881,665

Art Unit: 2817

Filed: June 18, 2001

Examiner: H. Choe

For: **HIGH FREQUENCY POWER  
AMPLIFIER**

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**PENDING CLAIMS**

1. A high frequency power amplifier, comprising:  
a transistor for amplifying signals and having an input side; and  
an input-side impedance matching circuit connected between the input side of said transistor and a signal input terminal of the amplifier, wherein said input-side impedance matching circuit provides an impedance of a substantially open circuit load with respect to even number higher harmonics of a fundamental wave of a high frequency signal and comprises a third harmonic reflecting circuit, a second harmonic processing circuit, and a fundamental wave matching circuit, disposed sequentially from the signal input terminal.

2. The high frequency power amplifier according to claim 1, wherein a phase angle of reflection of a second harmonic is 0 to 90 degrees, and reflection is 0.6 to 1.0, with respect to a reflection coefficient when said input-side impedance matching circuit is viewed from the input side of said transistor.

5. A high frequency power amplifier, comprising:  
a transistor for amplifying signals and having an input side; and  
an input-side impedance matching circuit connected between the input side of said transistor and a signal input terminal of the amplifier, wherein said input-side impedance matching circuit provides an impedance of a substantially short-circuit load with respect to odd number harmonics of a fundamental wave of a high frequency signal.

6. The high frequency power amplifier according to claim 5, wherein a phase angle of reflection of a third harmonic is 110 to 270 degrees, and reflection is 0.6 to 1.0, with

respect to a reflection coefficient when said input-side impedance matching circuit is viewed from the input side of said transistor.

7. The high frequency power amplifier according to claim 6, wherein said input-side impedance matching circuit comprises a third harmonic reflecting circuit, a second harmonic processing circuit, and a fundamental wave matching circuit, disposed sequentially from the signal input terminal.

8. The high frequency power amplifier according to claim 5, wherein said input-side impedance matching circuit comprises a third harmonic reflecting circuit, a second harmonic processing circuit, and a fundamental wave matching circuit, disposed sequentially from ~~a~~ the signal input terminal.

9. A high frequency power amplifier, comprising:  
a front stage transistor;  
a rear stage transistor; and  
an inter-stage impedance matching circuit connected between said front stage transistor and said rear stage transistor for matching impedances, wherein higher harmonics generated in said front stage transistor are inputted into said rear stage transistor, and a higher harmonic load of said rear stage transistor is adjusted by said inter-stage impedance matching circuit.